"Electrochemical Preparation of Apatite Materials."

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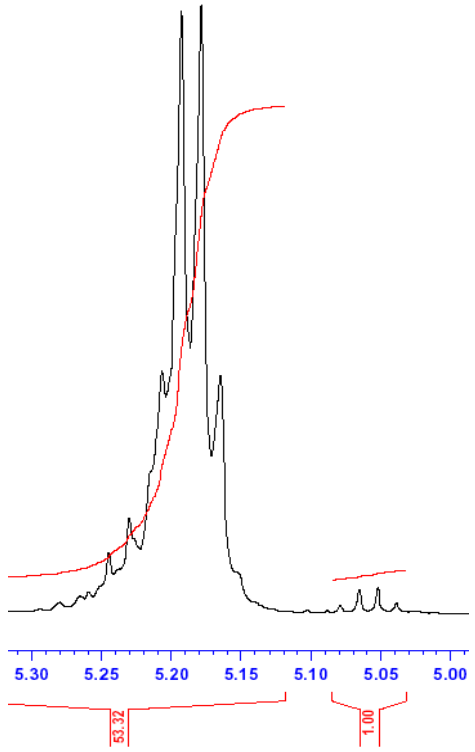
We recently discovered that hydroxyapatite (HA) can be used in a single-step process to initiate the ring-polymerization of L-lactide to form HA/poly-L-lactide composites. These composites are interesting because:

- *HA and poly-L-lactide components are osteoconductive and resorbable. Typical applications for such composites include bone fixation plates and screws.*
- *There is no tissue reaction due to corrosion byproducts often associated with metal devices.*
- *HA/poly-lactide composites can exhibit mechanical properties (compressive strength and elastic modulus) that approach those of living bone.*

Advantages of our composites, and processing techniques needed to prepare them:

- *Polymerization mechanism suggests a significant fraction of the living anion may be electrostatically bound to the hydroxyapatite. Improved interfacial strength is expected.*
- *Billets of composite are produced in a single step with no added solvent.*
- *Both the polymerization chemistry and the polymer processing are "Green."*



^{1}H NMR spectrum of poly-L-lactide produced using HA as the initiator.

Polymer signal is on left hand side of spectrum. Unreacted L-lactide monomer is on right.